CLAIMS

1. A polynucleotide encoding a polypeptide comprising the sequence FLDQVAFXV (Seq. ID No. 1), wherein X is any amino acid.

2. A polynucleotide encoding a polypeptide comprising the sequence FLFSWYAXV (Seq. ID No. 3), wherein X is any amino acid.

3. The complement of a polynucleotide of claim 1.

4. The complement of a polynucleotide of claim 2.

5. A gene delivery vehicle comprising a polynucleotide of any of claims 1 to 4.

6. The gene delivery vehicle of claim 5, wherein the vehicle is selected from the group consisting of a plasmid, a cosmid, a recombinant viral vector, and a liposome-containing vehicle.

7. The gene delivery vehicle of claim 5, wherein the recominant viral vector is a recombinant DNA viral vector or a recombinant RNA viral vector.

8. A host cell comprising a polynucleotide of any of claims 1 to 4.

9. A method of recombinantly producing a polynucleotide, comprising growing the host cell of claim 8 and isolating the polynucleotide produced thereby.

10. A composition comprising a polynucleotide of any of claims 1 to 4, and a carrier.

11. The composition of claim 10, wherein the carrier is a solid support.

12. The composition of claim 10, wherein the carrier is a pharmaceutically acceptable carrier.

13. A polypeptide comprising the sequence FLDQVAFXV (Seq. ID No. 1), wherein X is any amino acid.

14. A polypeptide comprising the sequence FLFSWYAXV (Seq. ID No. 3), wherein X is any amino acid.

15. A polypeptide that is preferentially recognized by gp100 specific cytotoxic T lymphocytes which comprises the polypeptide of claim 13.

16. A polypeptide that is preferentially recognized by gp100 specific cytotoxic T lymphocytes which comprises the polypeptide of claim 14.

17. A method of recombinantly producing a polypeptide, comprising growing the host cell of claim 8 under conditions suitable for the transcription and translation of the polynucleotide and isolating the polypeptide produced thereby.

18. A composition comprising the polypeptide of claim 15 or 16 and a carrier.

19. The composition of claim 18, wherein the carrier is a solid support.

20. The composition of claim 19, wherein the carrier is a pharmaceutically acceptable carrier.

21. A host cell comprising the polypeptide of claim 15 or 16.

22. The host cell of claim 21, wherein the cell is an antigen presenting cell (APC)and the polypeptide is present on the surface of the cell.

23. The host cell of claim 22, wherein the APC is a dendritic cell.

24. A population of educated, antigen-specific immune effector cells produced by culturing naïve immune effector cells with antigen-presenting cells (APC) cells which express the polypeptide of claim 14 or claim 15 on the surface of the APCs.

25. The population of claim 24, wherein the antigen presenting cells (APCs) are dendritic cells.

26. The population of claim 24, wherein the immune effector cells are cytotoxic T lymphocytes (CTLs).

27. The population of claim 24, wherein immune effector cells are genetically modified.

28. The population of claim 24, wherein the antigen-presenting cells are genetically modified.

29. A composition comprising the population of any of claims 24 to 28, and a carrier.

30. The composition of claim 29, wherein the carrier is a pharmaceutically acceptable carrier.

31. A method of inducing an immune response in a subject, comprising administering to the subject an effective amount of the polypeptide of

claim 15 or 16, under the conditions that induce an immune response to the polypeptide.

32. The method of claim 31, further comprising administering an effective amount of a cytokine to the subject.

33. The method of claim 31, further comprising administering an effective amount of a co-stimulatory molecule to the subject.

34. A method of inducing an immune response to a melanoma antigen in a subject, comprising administering to the subject an effective amount of the antigen-presenting cell of claim 22 and under conditions that induce an immune response to the antigen.

35. The method of claim 34, further comprising administering an effective amount of a cytokine to the subject.

36. The method of claim 34, further comprising administering an effective amount of a co-stimulatory molecule to the subject.

37. The method of claim 34, wherein the antigen-presenting cell is genetically modified.

38. The method of claim 37, further comprising genetically modifying the cell to express a cytokine.

39. The method of claim 37, further comprising genetically modifying the cell to express a co-stimulatory molecule.

40. A method of adoptive immunotherapy, comprising administering to a subject an effective amount of a population of educated, antigen-specific immune effector cells of any of claims 24 to 28.

41. A database comprising the the nucleotide sequence of any of the polynucleotides of claims 1 to 4.